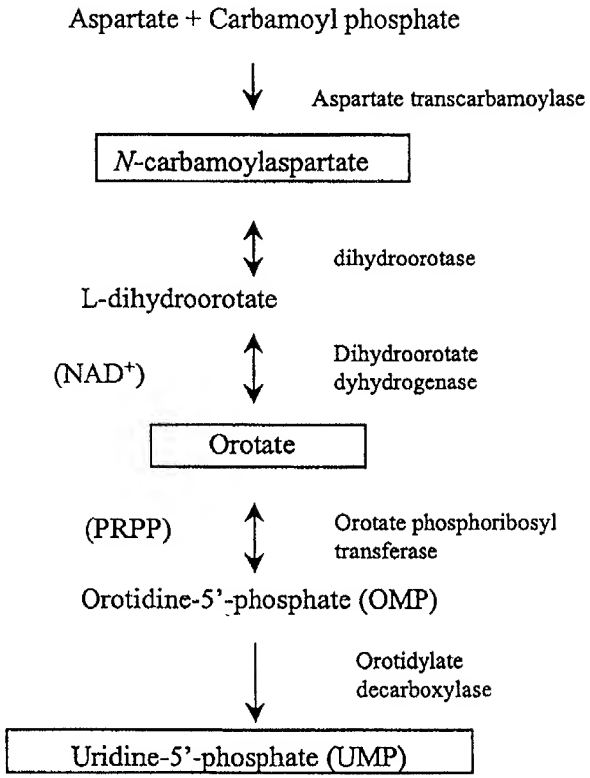
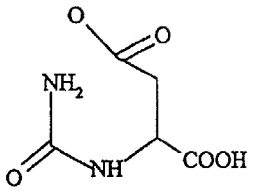
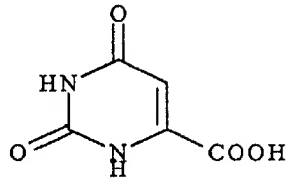
Figure 1.

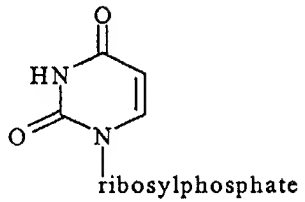




N-carbamoylaspartate



Orotate



UMP

Figure 2.

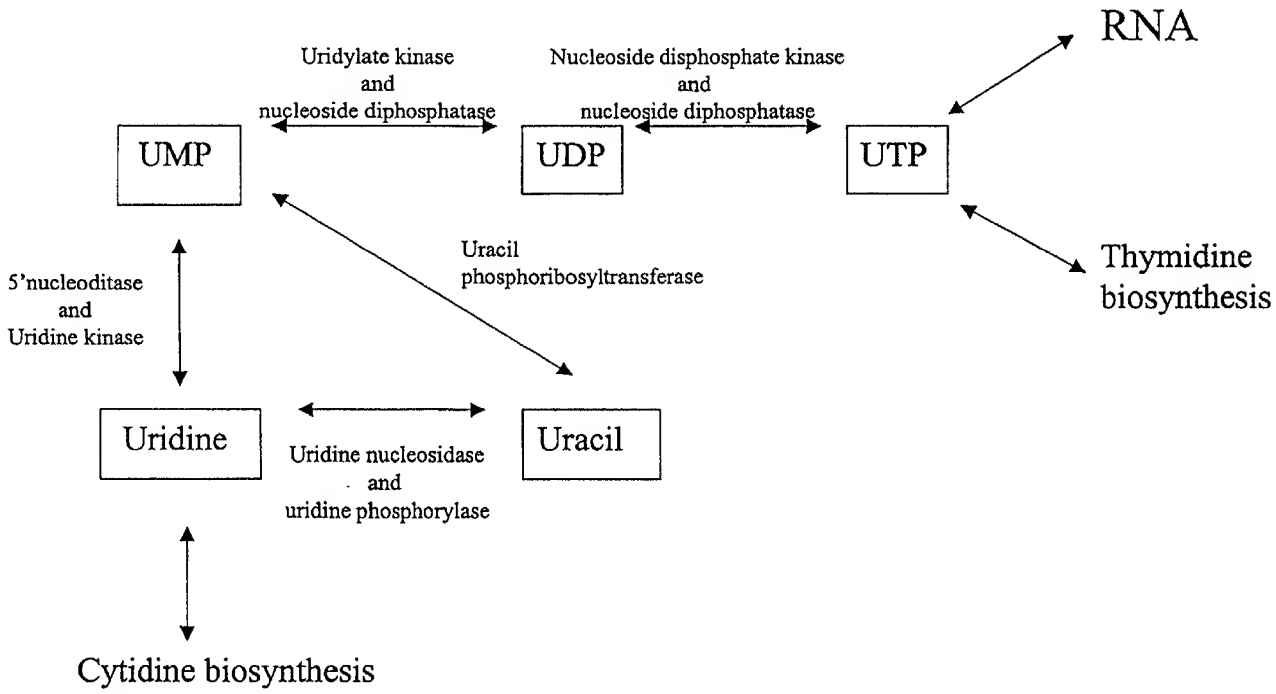
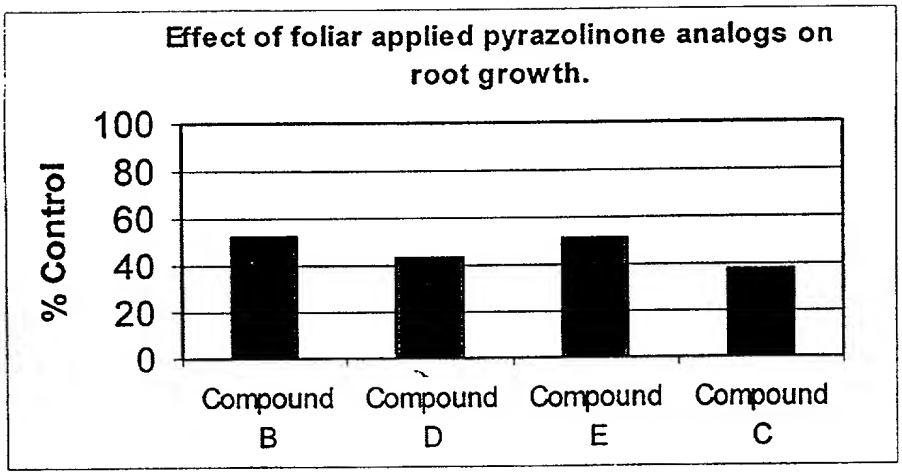


Figure 3


Effect of foliar applied pyrazolinone analogs on root growth.
% Control
100
80
60
40
20
0
Compound B
Compound D
Compound E
Compound C

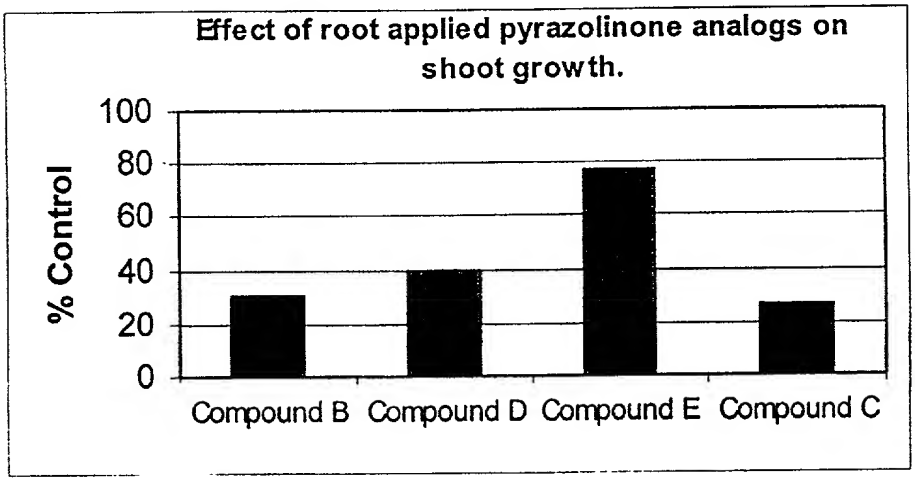

Effect of root applied pyrazolinone analogs on shoot growth.
% Control
100
80
60
40
20
0
Compound B
Compound D
Compound E
Compound C

Figure 4.

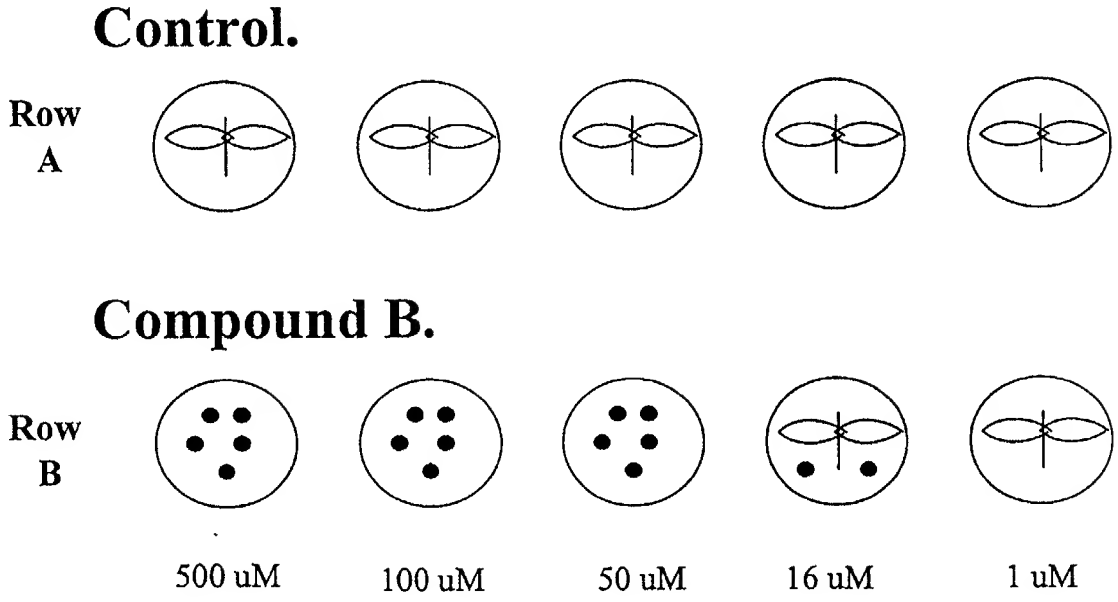


Figure 5.

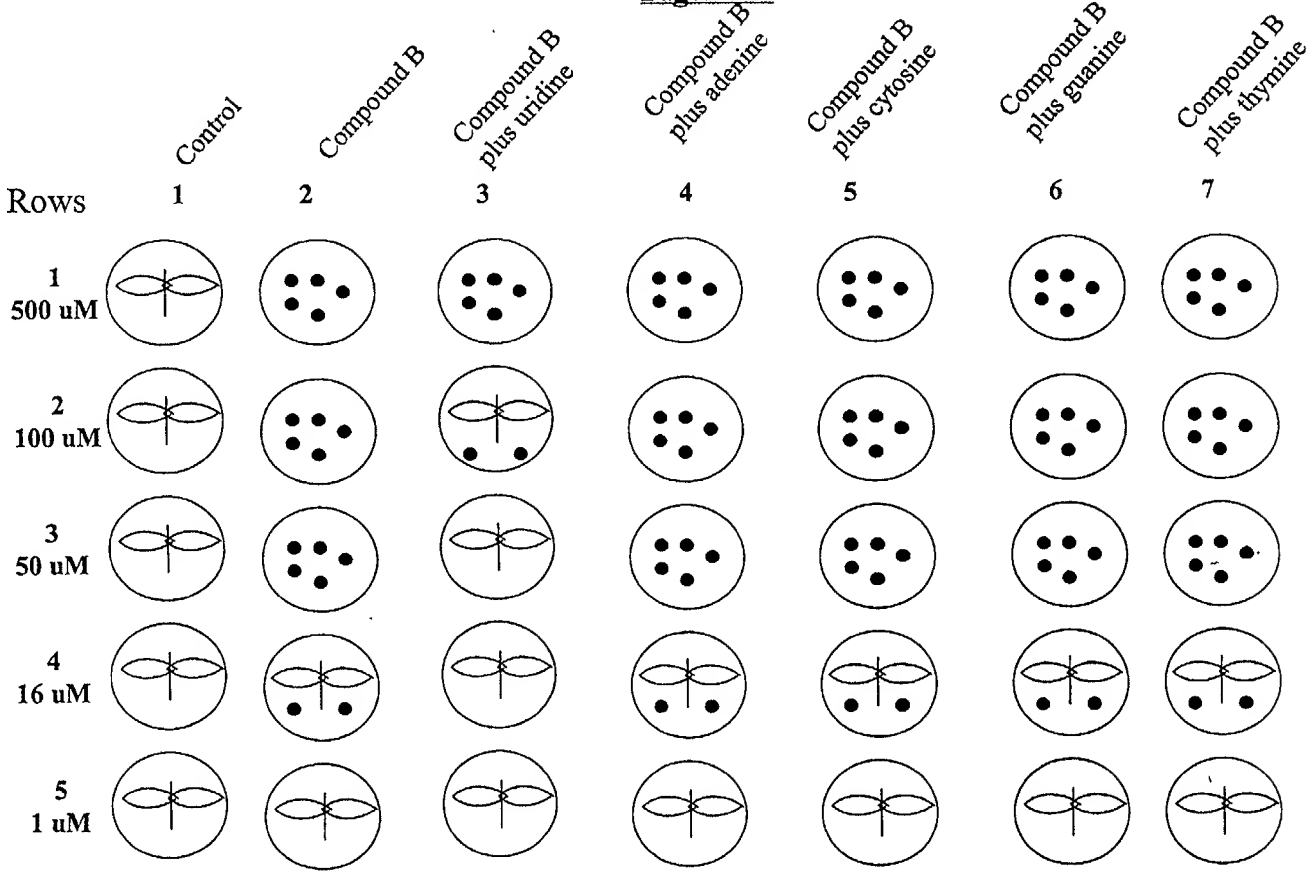
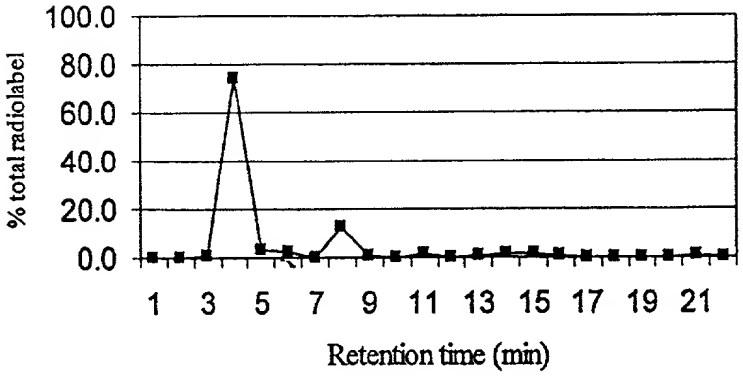


Figure 6.

HPLC profile of soybean cells treated with
^{14}C-carbamyl aspartate alone (control) for 48 hours.



HPLC profile of soybean cells treated with ^{14}C-carbamyl aspartate
plus 100 uM compound B for 48 hours.

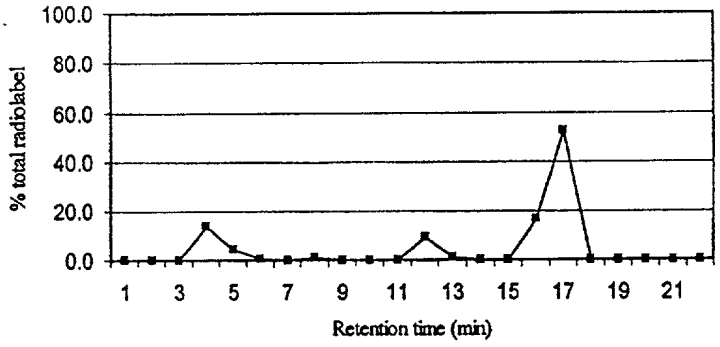
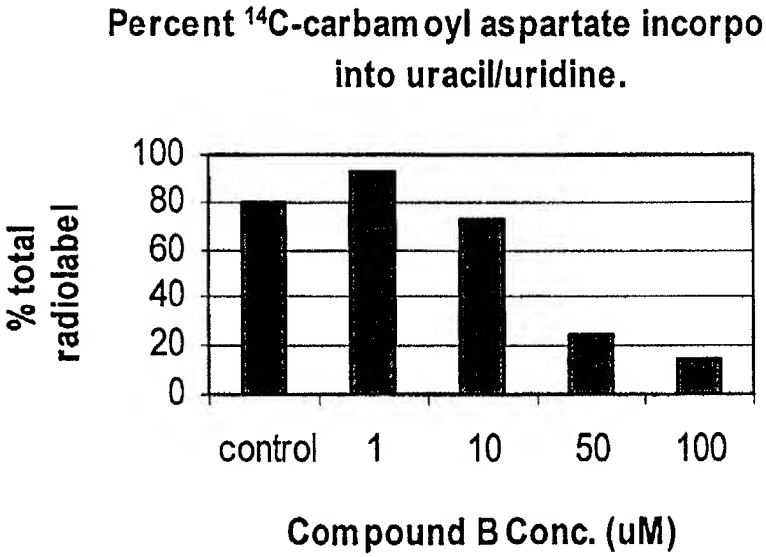


Figure 7.


Percent 14C-carbamoyl aspartate incorporated into uracil/uridine.
% total radiolabel
100
80
60
40
20
0
control
1
10
50
100
Compound B Conc. (uM)

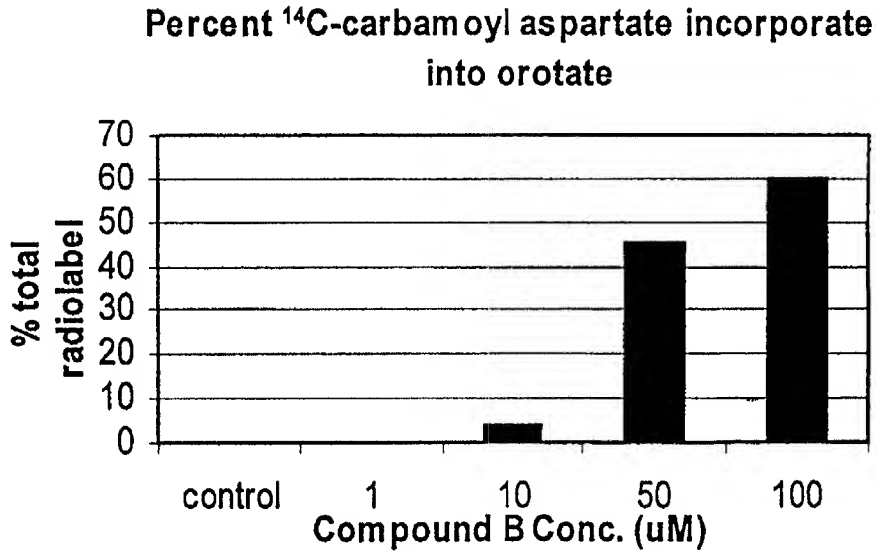

Percent 14C-carbamoyl aspartate incorporated into orotate
% total radiolabel
70
60
50
40
30
20
10
0
control
1
10
50
100
Compound B Conc. (uM)

Figure 8.

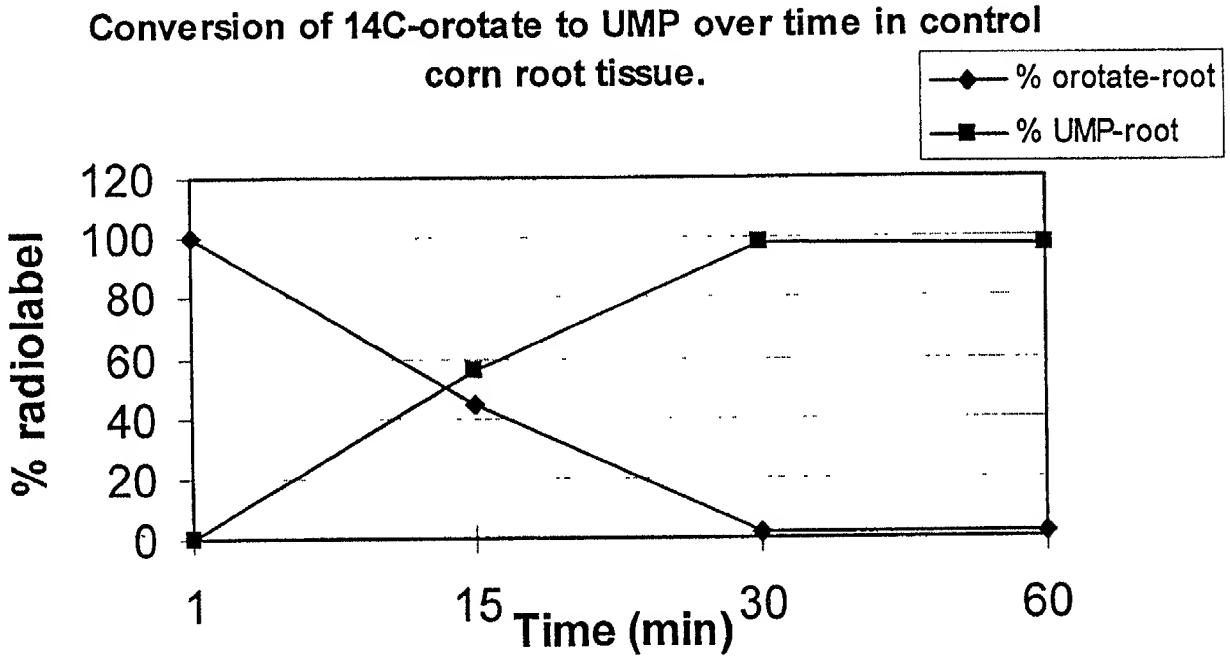

Conversion of 14C-orotate to UMP over time in control corn root tissue.
% orotate-root
% UMP-root
% radiolabel
120
100
80
60
40
20
0
1
15
30
60
Time (min)

Figure 9.

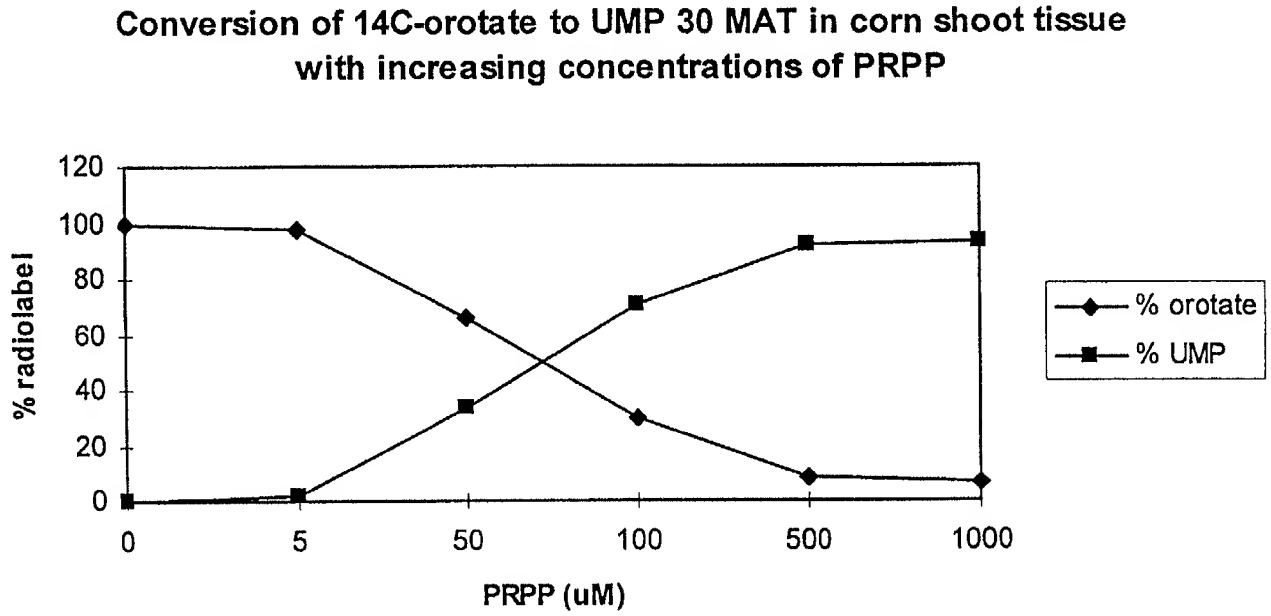


Figure 10.

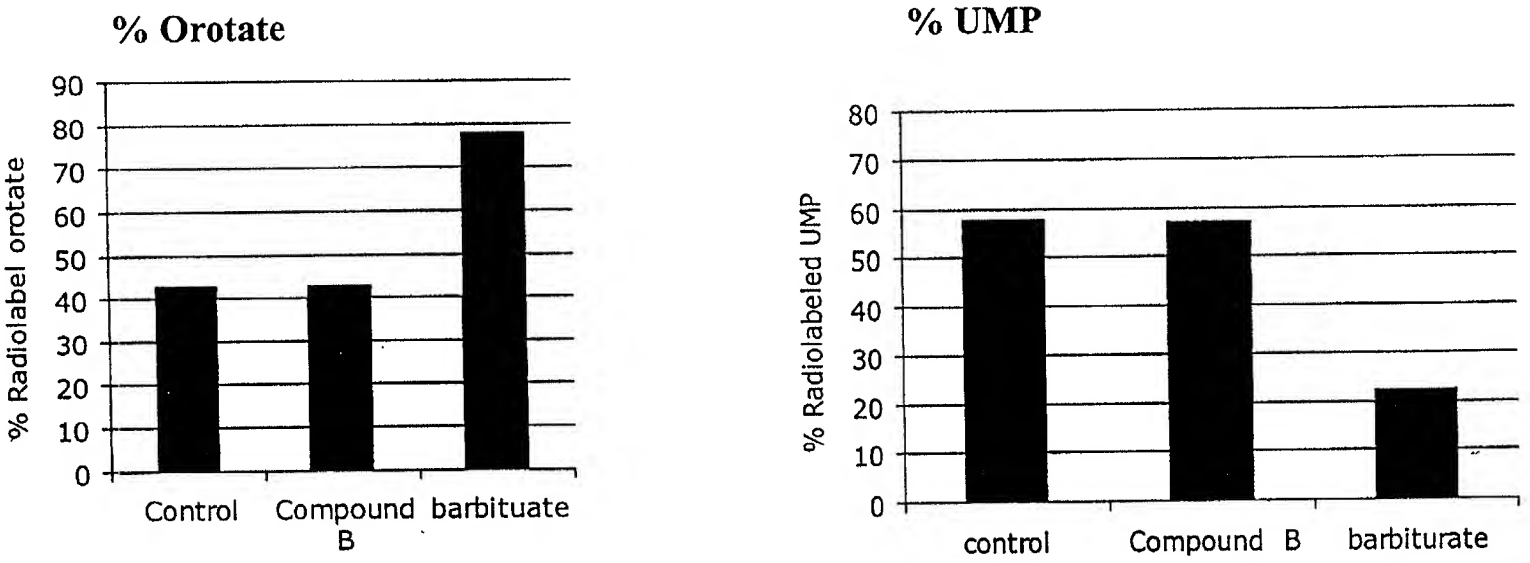
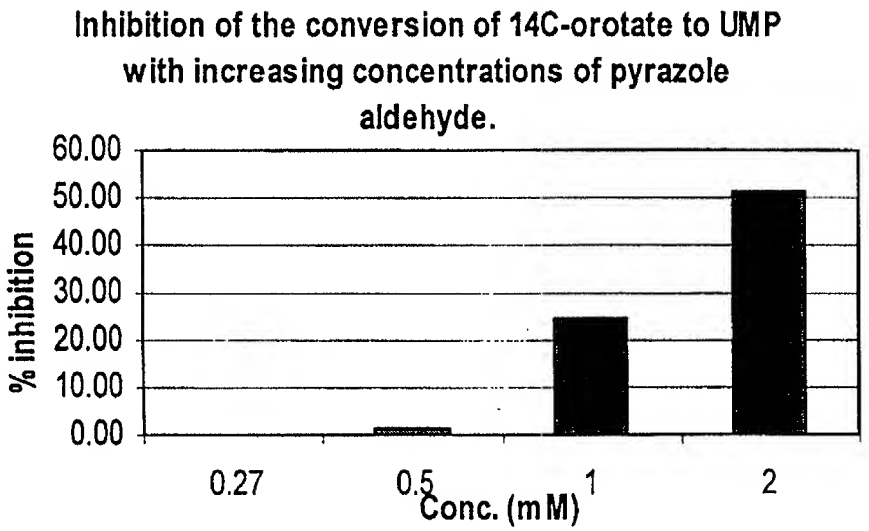


Figure 11.


Inhibition of the conversion of 14C-orotate to UMP with increasing concentrations of pyrazole aldehyde.
% inhibition
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.27
0.5
1
2
Conc. (mM)

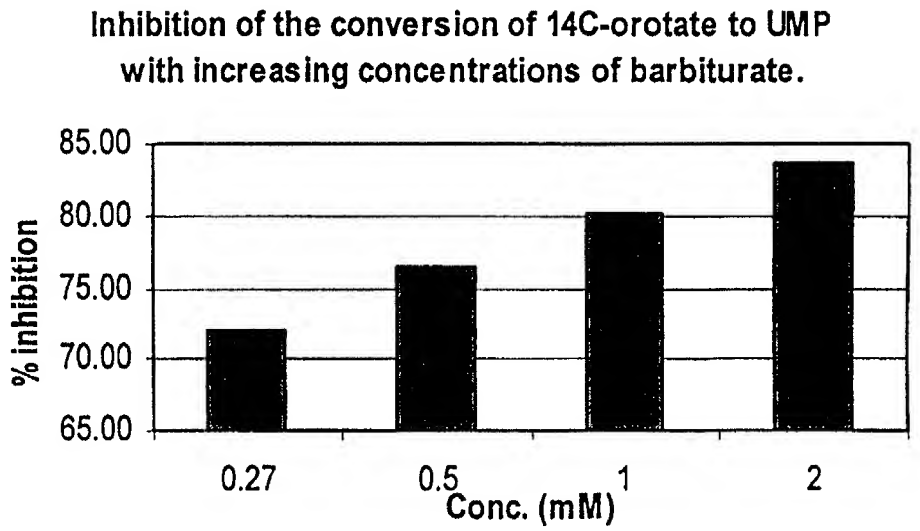

Inhibition of the conversion of 14C-orotate to UMP with increasing concentrations of barbiturate.
% inhibition
85.00
80.00
75.00
70.00
65.00
0.27
0.5
1
2
Conc. (mM)

Figure 12.

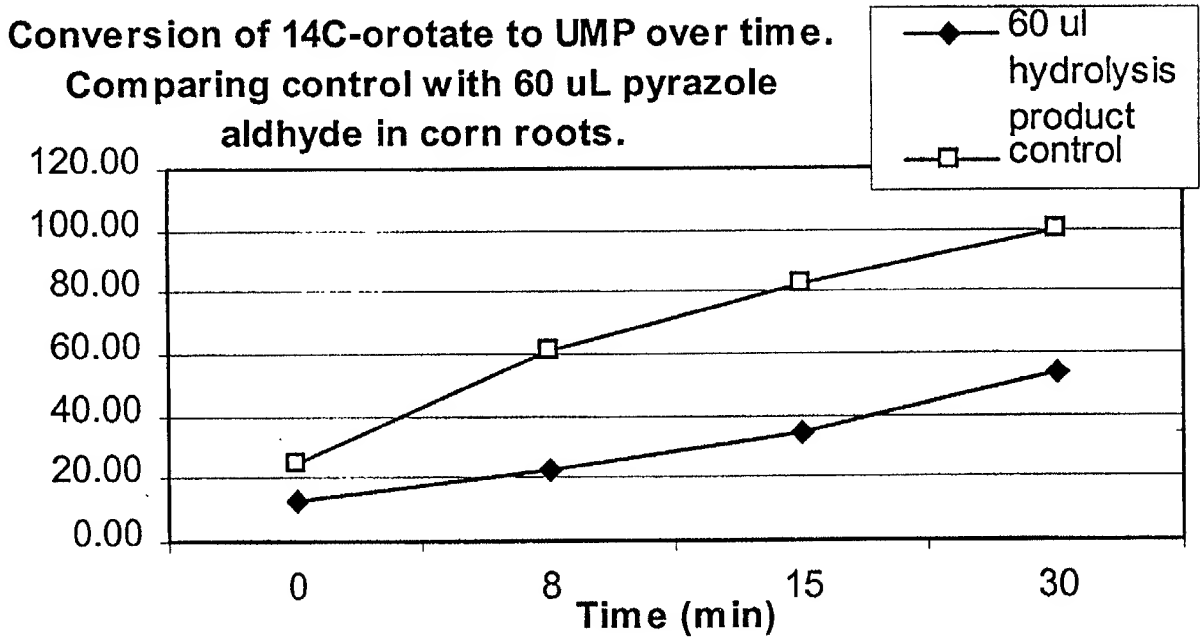

Conversion of 14C-orotate to UMP over time.
Comparing control with 60 uL pyrazole aldhyde in corn roots.
60 ul hydrolysis product
control
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0
8
15
30
Time (min)

Figure 13.

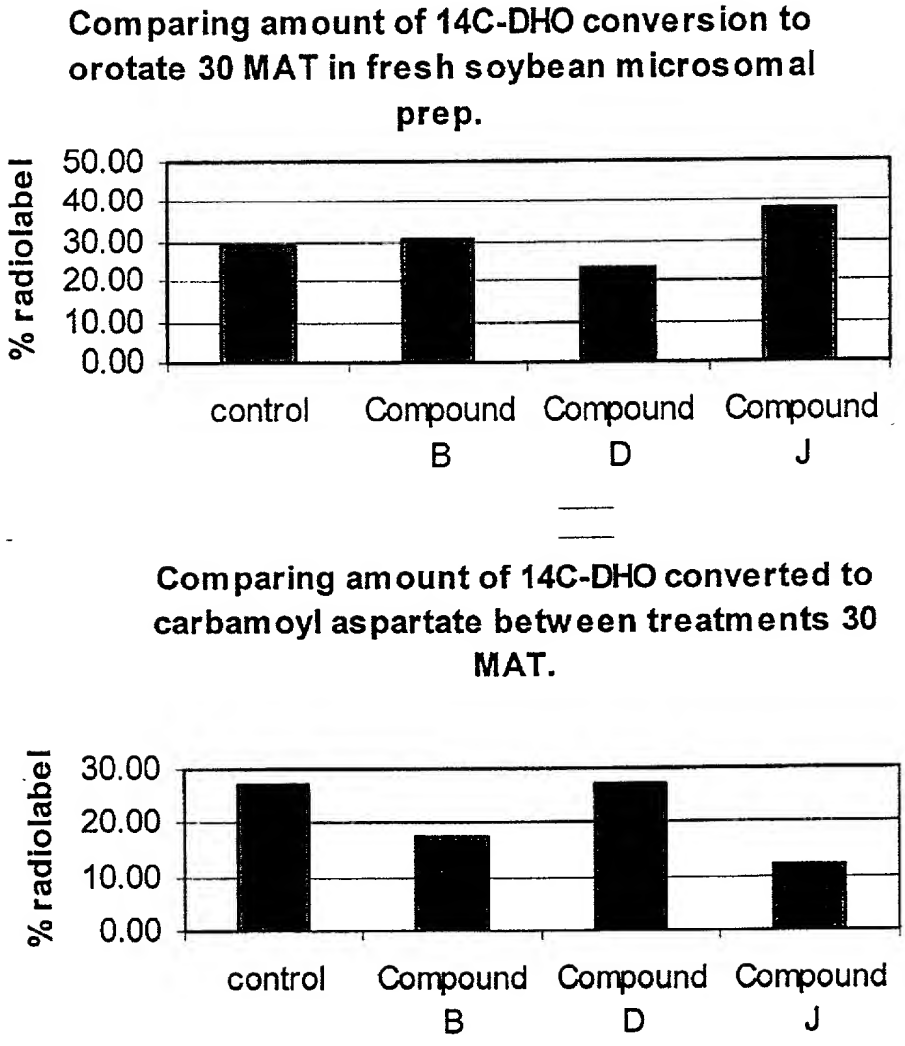

Comparing amount of 14C-DHO conversion to orotate 30 MAT in fresh soybean microsomal prep.
% radiolabel
50.00
40.00
30.00
20.00
10.00
0.00
control
Compound B
Compound D
Compound J
Comparing amount of 14C-DHO converted to carbamoyl aspartate between treatments 30 MAT.
% radiolabel
30.00
20.00
10.00
0.00
control
Compound B
Compound D
Compound J

Figure 14.

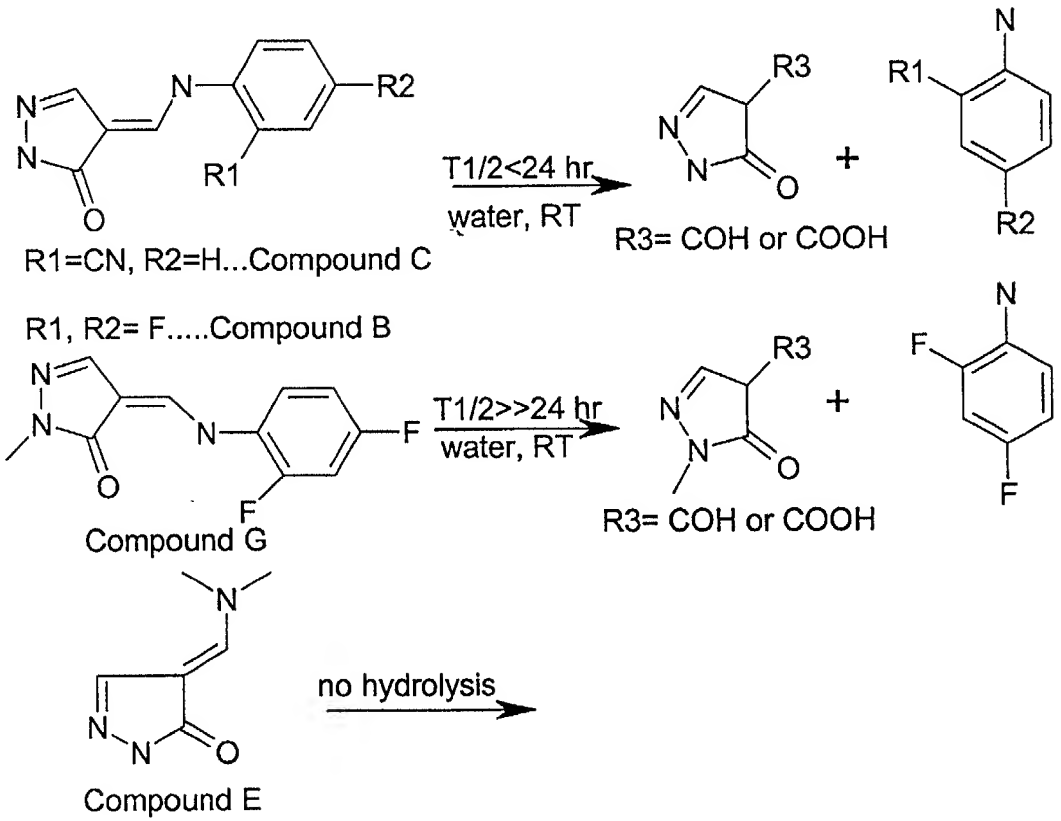

R1=CN, R2=H...Compound C
T1/2<24 hr
water, RT
R3= COH or COOH
R1, R2= F.....Compound B
Compound G
T1/2>>24 hr
water, RT
R3= COH or COOH
no hydrolysis
Compound E

Figure 15.

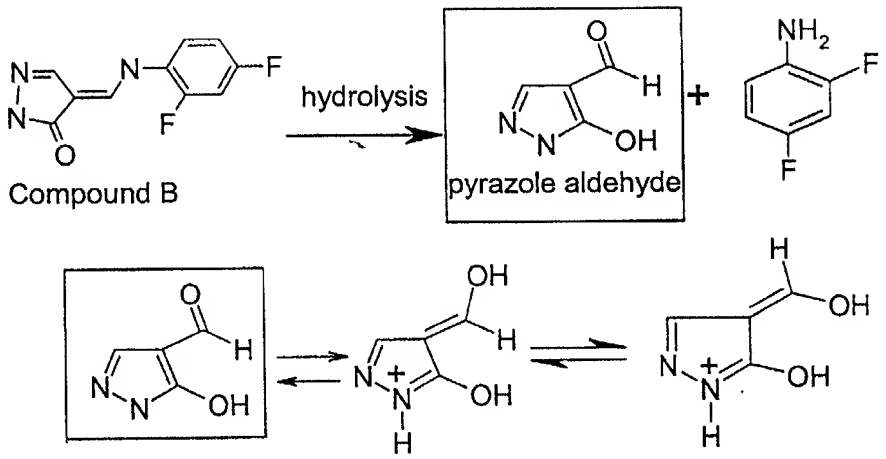
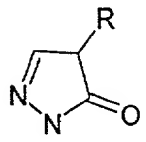


Figure 16.



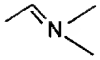
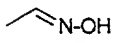
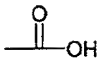
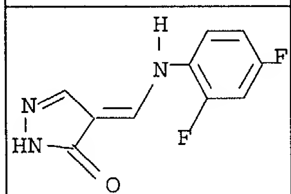
R =	Compound	Active and Reversed
	F	YES
	E	YES
	D	YES
	J	NO

Table 1

CL # and Structure	Rate g/ha	ABUTH	AMBEL	GALAP	SEBEX	SOLNI	AVEFA	BROTE	DIGSA	ECHCG	SETVI	SOR-HAS	GLXMA	ORYSA	TRZAW	ZEAMX	Rate g/ha	ABUTH	AMATA	AMBEL	GALAP	IPOSS	SEBEX	SOLNI	AVEFA	BROTE	DIGSA	ECHCG	SETVI	SOR-HAS	GLXMA	ORYSA	TRZAW	ZEAMX
Compound B	1000	0	5	X	3	3	0	0	7	7	5	7	5	2	0	5	1000	0	2	1	0	3	0	0	7	6	7	6	3	0	0	7	0	7
	500	0	0	0	0	0	0	0	3	5	2	3	0	0	0	0	500	0	2	2	0	3	0	0	6	6	7	7	2	0	0	7	0	6
																																		

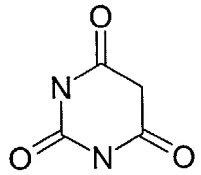
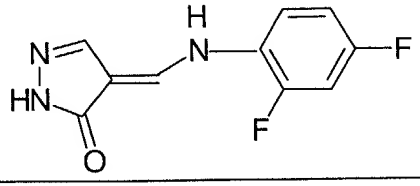
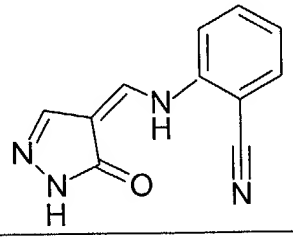
	Scientific Name	Common Name	Bayer Code
Broadleaf weeds	Abutilon theoprasti	velvetleaf	ABUTH
	Ambrosia artemisiifolia	common ragweed	AMBEL
	Galium aparine	catchweed bedstraw	GALAP
	Sesbania exaltata	hemp sesbania	SEBEX
	Solanum nigrum	black nightshade	SOLNI
Grass weeds	Avena fatua	wild oats	AVEFA
	Bromus tectorum	downy brome	BROTE
	Digitaria sanguinalis	large crabgrass	DIGSA
	Echinochloa crus-galli	barnyardgrass	ECHCG
	Setaria viridis	green foxtail	SETVI
	Sorhum halapense (seed-ling)	johnsongrass	SORHAS
Crops	Glycine max	soybean, Williams var.	GLXMAW
	Orysa sativa	rice, Tebonnet var.	ORYSAT
	Triticum aestivum	winter wheat, Riband var.	TRZAWR
	Zea mays	field corn	ZEAMX

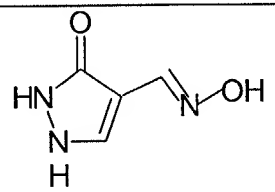
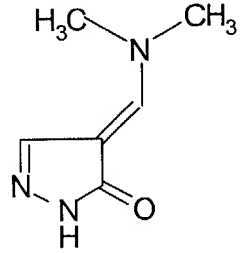
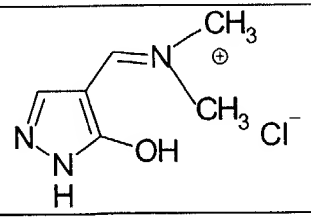
Table 2.

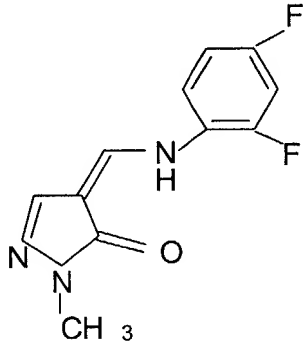
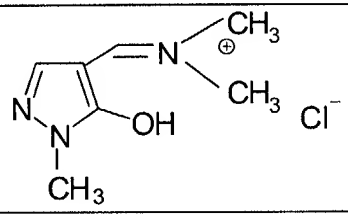
Concentration of the herbicide (μM)

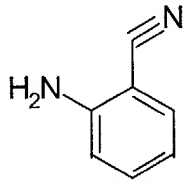
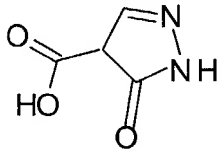
Treatment	500	250	125	63	31	16	7.8	3.9
Compound B	8	7C	6C	6C	5C	5C	5C	5C
Compound B + 100 μM Uracil	5C	3C	3C	0	0	0	0	0
Compound B + 100 μM Uridine	6C	5C	3C	1	0	0	0	0
Compound B + 100 μM UMP	6C	5C	3C	1	0	0	0	0
Compound B + 100 μM AMP	8	7C	6C	5C	5C	5C	5C	5C
Compound B + 100 μM Adenine	8	7C	6C	5C	5C	5C	5C	5C
Compound B + 100 μM Cytosine	8	7C	6C	5C	5C	5C	5C	5C
Compound B + 100 μM Guanine	8	7C	6C	6C	5C	5C	5C	5C
Compound B + 100 μM Thymine	8	7C	6C	6C	5C	5C	5C	5C
Compound B + 100 μM Xanthine	8	7C	6C	6C	5C	5C	5C	5C

Table 3
Percent Inhibition

		% inhibition			
Compound	structure	GH SETVI injury (1 kg/ha post)	Miniscreen injury (reversal)	Hydroponic xylem injury.	uracil reversal
control		0	0	0	
barbiturate		NT	0	NT	
B		70	60 (0)	70	YES
C		60	80 (50)	75	PARTIAL

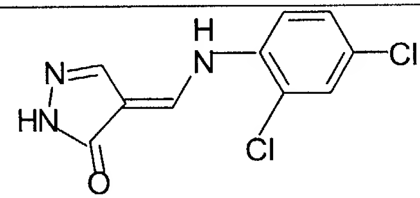
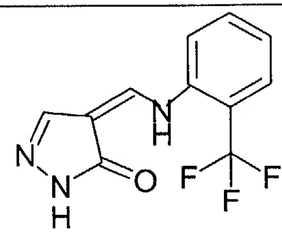
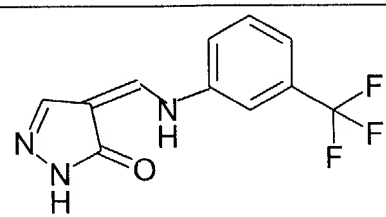
		% inhibition			
Compound	structure	GH SETVI injury (1 kg/ha post)	Miniscreen injury (reversal)	Hydroponic xylem injury.	uracil reversal
D		50	40 (0)	60	YES
E		50	65 (0)	25	YES
F		50	55 (0)	65	YES

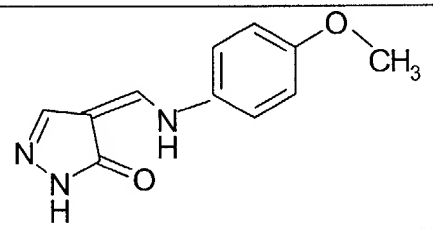
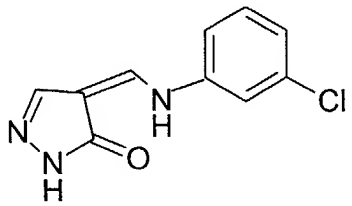
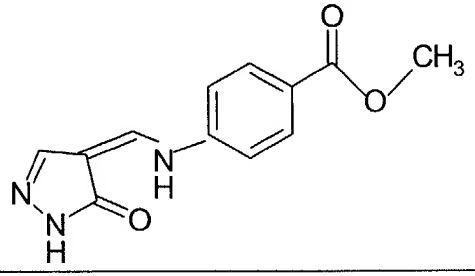
		% inhibition			
Compound	structure	GH SETVI injury (1 kg/ha post)	Miniscreen injury (reversal)	Hydroponic xylem injury.	uracil reversal
G		0	0	20	NO
H		0	0	0	NO

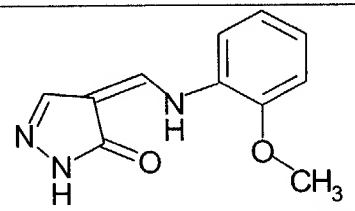
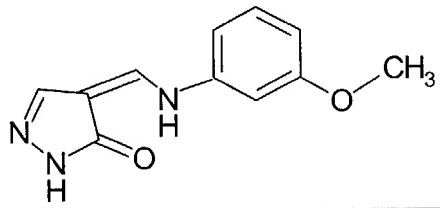
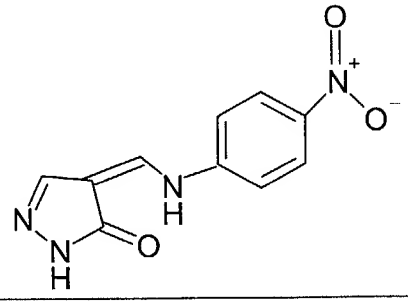
		% inhibition			
Compound	structure	GH SETVI injury (1 kg/ha post)	Miniscreen injury (reversal)	Hydroponic xylem injury.	uracil reversal
I		0	0	0	NO
J		0	0	0	NO

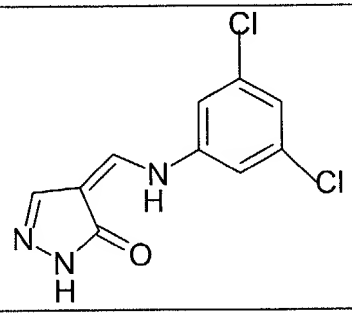
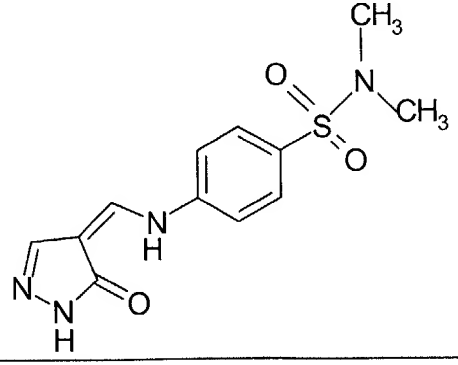
Notes: NA denotes that compound was not tested.
Miniscreen data in parenthesis is the extent of uracil reversal at 50 uM tested compound.

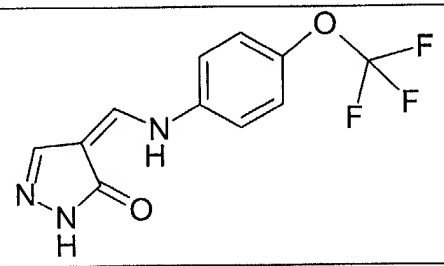
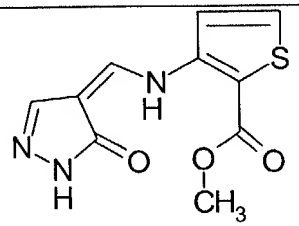
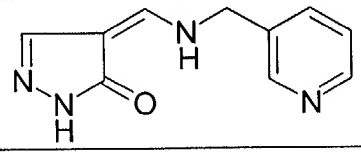
Table 4
Percent Inhibition

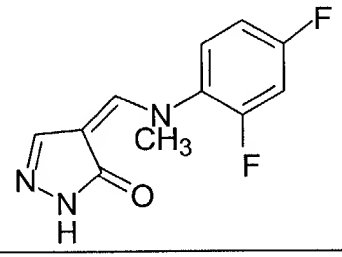
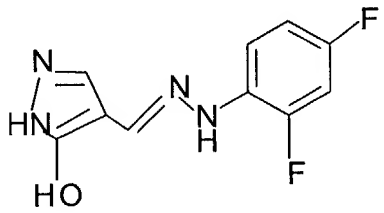
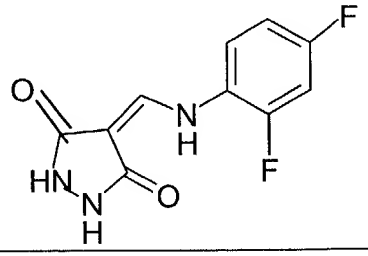
Compound	structure	% inhibition GH activity on SETVI	% inhibition @50 μM Miniscreen activity	uracil reversal
A		70	70	YES
K		60	80	YES
L		60	80	YES

Compound	structure	% inhibition GH activity on SETVI	% inhibition @50 µM Miniscreen activity	uracil reversal
M		50	70	YES
N		60	80	YES
O		10	70	YES

Compound	structure	% inhibition GH activity on SETVI	% inhibition @50 µM Miniscreen activity	uracil reversal
P		30	80	YES
Q		40	80	YES
R		40	70	YES

Compound	structure	% inhibition GH activity on SETVI	% inhibition @50 µM Miniscreen activity	uracil reversal
S		50	80	YES
T		20	70	YES

Compound	structure	% inhibition GH activity on SETVI	% inhibition @50 µM Miniscreen activity	uracil reversal
U		0	80	YES
V		50	60	YES
W		40	60	YES

Compound	structure	% inhibition GH activity on SETVI	% inhibition @50 µM Miniscreen activity	uracil reversal
X		70	50	YES
Y		50	70	YES
Z		0	30	YES